

**Wisconsin Highway Research Program
Request for Proposal for**

Field Evaluation of Wisconsin Modified Binder Selection Guidelines Phase II

**Questions regarding the content of this RFP are due no later than
5PM (CDT), Monday, December 5, 2011**

**Responses to questions will be posted to the WisDOT Research and Library website
(<http://wisdotresearch.wi.gov/rfps-and-proposals>) by Monday, December 12, 2011**

**Proposals are due
5 PM (CST), Friday, January 13, 2012**

**For further information regarding this RFP
contact Andrew Hanz
at (608) 262-3835
E-mail: ajhanz@wisc.edu**

Monday, November 21, 2011

Researcher Proposal Preparation Guidelines

WHRP Proposal Guidelines are available on the WisDOT Research and Library website
(<http://wisdotresearch.wi.gov/wp-content/uploads/WisDOT-Policy-Research-proposal-guidelines-master.pdf>). Please refer to these instructions in preparation of your response.

I. Background and Problem Statement

In October 2007 the Wisconsin Department of Transportation (WisDOT) and the Wisconsin Highway Research Program completed, “SPR 0092-03-13: Field Validation of Modified Binder Selection Guidelines.” The study served as an initial step towards validating WisDOT’s asphalt binder selection criteria. Field sites were identified, and HMA materials (asphalt binder and loose mix) were sampled. The most valuable product of this research was the characterization of the as-built asphalt binder material properties using newly-developed test methods that focused on damage-resistance characteristics. Early-life pavement distress surveys were conducted to evaluate the ability of these test methods to quantify the effect of use of modified binders on field performance, however, there was difficulty in differentiating the performance of the pavements due to relatively short time frame over which they were in service. Given the timing of this RFP, the field sections have now been in-service an additional five years, providing the opportunity to re-evaluate their performance. It is anticipated that the additional time in-service will provide more clear differentiation in field performance, allowing for an improved understanding of the ability of the test methods used to characterize the asphalt binder properties in the original study to relate to pavement performance. Furthermore, the materials sampled from the original study have been preserved, allowing for additional materials characterization using recently developed test methods for evaluation of modified asphalt binders. There is potential that application of these new techniques in conjunction with field performance data from the existing test sections will improve WisDOT’s understanding of the critical asphalt binder properties that influence field performance.

II. Objectives

The objectives of this study are to determine the following:

- In-service performance assessment of field sections documented in the original research report.
- Assessment of tests used in previous study and developments in characterization of modified binders since the study has ended.
 - Suitability of AASHTO MP 19 recommendations to WisDOT specifications.
 - Characterization of original materials using updated testing methodologies if deemed more useful than those from previous study (pending availability of materials).
- Establishing performance of binders/modifiers used in WI.

III. Scope of Work

a) Task 1: Literature Review

- i) Wisconsin based research: Perform a detailed review of WHRP project 0092-03-13: Field Evaluation of Wisconsin Modified Binder Selection Guidelines and related research efforts. Specifically, summarize the location of the WisDOT field sections and the test methods used in the report.
- ii) Synthesize state and national research related to characterization of modified binders to identify advancements in technology.
- iii) State specifications: Summarize specifications related to application and evaluation of modified binders and compare to the current state of practice in Wisconsin.

b) Task 2: WisDOT Field Performance Surveys

Conduct visual distress surveys of field sites identified in the original research report, document current performance using both WisDOT approved distress survey methods and photographs when necessary.

c) Task 3: Laboratory Testing

Characterize performance of modified binders sampled in the original study using new test methods identified in Task 1. Testing will be limited based on the availability of original material.

d) Task 4: Data Analysis, Conclusions & Final Report

- i) Update previous materials and pavement performance data base to include new finds from field surveys and laboratory testing.
- ii) Conduct data analysis of results of field and laboratory testing to identify trends and define relationships between laboratory measured values and field performance. Evaluate the statistical significance of the results and assess their impacts on the conclusions and recommendations provided in the previous research.

e) Task 5: Project Deliverables

- i) Draft Final Report: Submit a draft final report three months prior to the end date of the contract for review by the WHRP Flexible Pavements Technical Oversight Committee (TOC). The report will include the results of the research and recommend changes to WisDOT guidance related to modified binder selection guidelines. Specifically, the research will recommend changes to Chapter 14 of the WisDOT Facilities Development Manual, WisDOT Standard Specifications, and the Combined States Binder Group Method of Acceptance for Asphalt Binders.
- ii) Project Presentation: The researcher is required to present findings of the research including assessment of implementation potential to the WHRP Flexible Pavement TOC.

- iii) Final Report: Revise draft final report based on TOC Comments and submit final report to WHRP. One electronic and 15 hard copies of the report are required.

IV. WisDOT/TOC Contribution

- a) The TOC will provide oversight of the research project, review the reports and presentations, and offer feedback to the research team. If necessary the TOC will also provide support in gaining access to field sites. TOC time commitment on the project is not to exceed 40 hours.
- b) WisDOT Equipment
 - i) Researchers should not assume availability of WisDOT equipment in the proposal. If equipment is donated to the project by WisDOT or another entity, a letter of commitment must be included in the proposal. It is not anticipated any WisDOT equipment will be necessary to complete this project.

V. Other Project Requirements

- a) Requirements for Laboratory/Technician Certifications
 - i) No special certifications are required as part of this project.
- b) Required travel to fulfill Project Obligations
 - i) Travel throughout the state of Wisconsin will be necessary to conduct pavement distress surveys described in Task 2.
 - ii) Travel to Madison for final close-out presentations to the TOC will also be required.

VI. Budget and Time Frame

- a) Project Duration
 - i) The total duration of the project is 15 months with an anticipated start date of August 1, 2012.
 - ii) The draft final report shall be submitted at least three months prior to the end date of the contract.
 - iii) Contract is considered closed upon submission of electronic and hard copies of the final report
- b) Project Budget
 - i) The project budget shall not exceed \$70,000 and shall include any costs associated with performing tests, analyzing data, and preparing the draft and final reports.
- c) The researcher is expected to submit the draft final report with quality technical writing and proper grammar. It is acceptable to include a technical editor on the research team to ensure these requirements are met.
- d) Matching funds will not be considered in the proposal evaluation process.

VII. Implementation

- a) The findings from this research have the potential to be implemented both in the WisDOT-specific testing requirements of the Combined States Binder Group Method of Acceptance for Asphalt Binders, as well as further refine the PG selection guidelines set forth in the FDM.
- b) Researcher is expected to communicate benefits in terms of performance and cost savings.
- c) Researcher is expected to define tools to facilitate implementation.